

Remarks

This amendment is responsive to the official action mailed September 14, 2005, and is accompanied by a Petition for Extension under 37 C.F.R. §1.136(a) and the fee required for a three month extension.

Applicant has amended paragraphs [0033] – [0034] to remove the non-idiomatic statement that the opening 10 is a plug-in bushing, and to state more accurately that the plug-in bushing has an opening 10. This is in keeping with the description, which provides that the adapter 7 (the adapter being an element that fits between a cartridge 6 and a housing 3 of a plumbing fixture) has a stepped bore and the larger diameter part of the stepped bore forms a bushing that receives the end 11 of the line 12.

Applicant has also amended paragraph [0013] to expressly state that the expressions “ahead” and “behind” refer to longitudinal placement.

These clarifications obviate the objection to the specification. No new matter is presented.

Applicant's invention permits the end of a line to be engaged in the plumbing fixture using the plug-in bushing arrangement together with an undercut and a flange affixed at the end of the line to be affixed. The flange has a non-circular perimeter. The line is inserted into the plug-in bushing, bringing the flange (on the end of the line) longitudinally beyond the undercut. The flange has a non-circular perimeter. In its rotated position, part of the flange is located longitudinally behind the undercut. According to an inventive aspect, the undercut and the flange are shaped and sized so that the undercut and flange are wedged together when the line is in said position. Claim 1 defines this wedged engagement between the undercut and the flange. Claim 4 defines the direction of engagement as transverse, i.e., perpendicular to the longitudinal direction of the line.

The claims were rejected as anticipated by either of Hayes (US 4443028) or Lang (US 2819097). In the comments in the official action, the examiner replies to

applicant's previous statements to the effect that the prior art does not teach or suggest the wedging action claimed, taking the positions:

- that applicant's claim term "configured" did not recite a positive limitation (being similar to reciting "adapted to" ... perform a function);
- that a comparison of the prior art process with applicant's process was not a basis to assess patentability of the claimed product (apparently referring to assembly steps and treating the claims as product by process claims); and,
- that simply having differences between two prior art references is insufficient to establish that such references "teach away" from any combination thereof.

Applicant requests reconsideration of the rejections under 35 U.S.C. §102 over Hayes and Lang. Neither of the references, nor their combination, teaches the invention now claimed as a whole. Therefore, the rejections under 35 U.S.C. §102 should be withdrawn. Although the foregoing comments in reply to applicant's statements address considerations under 35 U.S.C. §103, only Section 102 rejections are of record. Nevertheless, applicant will point out that the references lack the specific structures claimed, as a whole, and that the references also fail to suggest the possibility or advantage of modification of their mechanisms as necessary to reach the invention claimed. Thus applicant's invention is both novel and unobvious as now claimed.

Regarding Hayes (US 4443028), the examiner is reading Hayes' element 28 as a disclosure of the claimed undercut. Element 28 in Hayes is a helical groove. See Figs. 3 and 4. Hayes' male part 14 has two radially protruding lugs 52 that can be aligned with the openings into helical grooves 28. Axial displacement of male/female parts 12/14 toward one another causes relative rotation of parts 12, 14 (or vice versa: relative rotation causes axial advance), due to the guidance of lugs 52 in groove 28. The axial advance continues until lugs 52 emerge from groove 28 (see Fig. 3). When the lugs 52 no longer engage groove 28, it is possible to rotate parts 12, 14 without further axial advance. In Hayes, this rotation brings lugs 52 into alignment with notches 30 that

define pockets in a reverse direction. A seal 36 resiliently presses the male element 12 and its lugs 52 in a direction opposite from the insertion direction and causes lugs 52 to drop back into pockets 30 in a push/twist locking arrangement.

Insofar as groove 28 may be construed as an undercut and lugs 52 as a flange, the undercut is not the structure that engages and holds the flange. Even if one considers that during assembly the lugs 52 are engaged in the groove 28, the reference does not have any rotated position at which the flange and the undercut can possibly be wedged together. The reference does not disclose applicant's invention as claimed, and in fact addresses connection challenges in a substantially different way.

There is no wedging structure or function disclosed or suggested anywhere in Hayes. The term "wedge" refers to progressively greater pressure or interference that is produced when jamming together parts. For example, one sort of wedge is a shim with a triangular cross section that is "wedged" when forced into a slot with a width equal to that of a point between the narrower and wider part of the wedge. A bar could be wedged into a narrowing or wedge-shaped slot in a similar way. Rotationally, a cylinder can have a flange with an increasing radius progressing angularly around a center point, which is "wedged" against a fixed diameter point in a bore when that cylinder is inserted and twisted. The plain meaning of the term "wedged" is that the structures bear progressively harder against one another when wedged together. This is an aspect of the invention claimed.

Hayes lacks any suggestion of a wedging structure or a wedging action and thus does not disclose or suggest applicant's invention.

Applicant's claim 1 defines a plug-in bushing and an undercut, as well as a flange on the line that can be passed through the opening in the plug-in bushing and rotated such that the flange is placed longitudinally beyond the undercut (preventing axial withdrawal until the flange is brought back into alignment with the opening. However, claim 1 also particularly and distinctly recites that the undercut and the flange are shaped and sized such that the undercut and flange are wedged together when the line is rotated to said position. This subject matter is particularly defined in claim 1. The

claim is novel over Hayes. Hayes teaches a detent-like structure where the inserted lugs (which are the non-round or eccentric structures of male part 14) are captured but certainly are not wedged against any structure as a result of rotation.

Thus, Hayes does not disclose the invention defined in claim 1 as a whole, or render the subject matter of claim 1 obvious. Hayes does not disclose a structure that is capable of wedging the Hayes lugs 52 because the prior art structure does not provide a wedging size and shape relationship between the analog of applicant's flange (namely Hayes' lugs 52) and applicant's undercut (comparable to the end surface of male part 12 of Hayes, where the lugs 52 can emerge from helical grooves 28). Hayes uses pockets rather than an undercut to hold the male part. Even if groove 28 can be considered an undercut, it is not possible also to consider the end surface of Hayes' male part 12 as the undercut and then even further also to consider the reverse pockets as the undercut too. Hayes does not disclose an undercut to hold a nonround flange, much less one where the flange and the undercut are jammed together (wedged) with relative rotation. The claimed invention is novel over Hayes.

Hayes neither discloses nor suggests applicant's claimed structure. There is no basis to conclude from the objective teachings of Hayes that the person of ordinary skill could or would alter Hayes' structures to achieve a wedging action. Applicant's invention is not shown to have been known or obvious.

In the alternative reference under 35 U.S.C. §102, namely Lang (US 2819097), a non-circular flange is defined by two diametrically opposite segments of a circle, identified in the reference as ledges 45. The ledges are provided near the end of a pressurized air line 42 and are configured such that the end of the line can be inserted into the fitting body 11 of connector 10 when coupling the line to the connector. The ledges 45 are passed through the spaces between the flanges 29, 31 on the bottom face of body 11 as shown in Figs. 1-3. Relative rotation of the line and the connector 10 then misaligns the ledges with the openings between the flanges, blocking retraction of the line in an axial direction if tension should be placed on the line, and keeping the line in the coupling.

Lang does not wedge together the ledges with the undercut by rotating the line relative to the coupling. Lang does not anticipate the claimed invention. Lang has another distinct way of keeping the coupling coupled.

Lang has one object of preventing decoupling when the air line is pressurized, and another object of enabling one of the connected portions (the line or the connector body) to be rotated through a full 360 degrees so that the air line has less of a tendency to kink. Whereas Lang makes the coupling freely rotatable around 360 degrees, it is plain that there is no disclosure or suggestion in Lang of a wedging relationship in a direction of relative rotation of an undercut and a flange as particularly claimed by applicant.

Applicant's independent claim 1 defines that the undercut and the flange are shaped and sized such that the undercut and flange are wedged together when the line is rotated to said position. As stated above, a wedging action by its plain meaning denotes progressively tighter engagement with displacement. Claim 1 specifically states that the displacement is rotation. Therefore, there is no basis to conclude that Lang, which teaches free rotation at col. 1, lines 25-30; col. 3, lines 29-32; col. 3, lines 58-66, anticipates the subject matter claimed. Claim 1 is allowable over Lang.

Applicant has amended claim 4 to further distinguish over Lang. Claim 4 adds to the subject matter of claim 1 the limitation that the undercut and flange are wedged together specifically by transverse force (as opposed to axial force). This characterizes the exemplary embodiments and further distinguishes from the prior art of record.

Neither Hayes nor Lang teaches or suggests a wedged engagement. Thus claim 1 and all the claims depending from claim 1 are properly allowable. Although not using a wedged engagement, as is apparent from the freedom of Lang's coupling to rotate around 360 degrees, Lang has internal air pressure and an axial spring directed axially. Although not using a wedged engagement, as is apparent from the capture of lugs 52 in the reverse pockets, Hayes has a resilient compressible seal directed axially. Neither of these configurations discloses wedged-together engagement. Even if one could regard their structures in hindsight as somehow related to wedging, which applicant submits

would be erroneous, claim 4 remains allowable because any pressure exerted in the references is longitudinal as opposed to transverse.

Claim 1 defines wedged engagement between the flange and the undercut. The references do not disclose wedged engagement and lack any objective teachings to suggest wedged engagement. Thus claim 1 is properly allowable independently of claim 4. The claims depend directly or indirectly from claim 1 and incorporate its limitations. All the claims are now allowable.

Applicant has corrected the matter in the specification to which the examiner objected (namely that the plug-in bushing has a hole rather than is a hole). Applicant has amended the claims to overcome the grounds of rejection. No new matter is presented. The differences between the invention and the prior art are such that the subject matter claimed, as a whole, is not shown to have been known or obvious.

The distinctions by which the claims distinguish over the prior art are structural limitations. The distinctions are not unspecified adaptations or capabilities or product by process limitations that rely on action such as assembly steps. The distinctions are structural and are not met by the prior art.

Applicant has overcome the official position that "configured" is not a structural term subject to reliance, or being much the same as "adapted." Claim 1 provides that the flange and the undercut are sized and shaped to provide wedging action. Claim 4 as amended recites that the wedging action can be applied in a transverse direction. These aspects of the invention are not disclosed or suggested in the prior art of record.

There is no basis to assert that any part of either Hayes' lugs 52 or Lang's ledges 45 are sized and shaped with an undercut so as to wedge together. Hayes' lugs drop back into pockets with clearance. There is no basis to assert wedging with rotation in Lang, which teaches expressly that the coupling is freely rotatable around 360 degrees.

The matters to which the examiner refers have each been corrected. The application is in proper form. The claims have been amended to particularly and distinctly define the subject matter regarded as the invention and more clearly to distinguish over the prior art of record. The differences between the invention and the


prior art are such that the subject matter claimed, as a whole, is not shown to have been known or obvious.

Insofar as the examiner points out that differences between two references may be insufficient to establish that the references "teach away" from a combination, the invention as presently claimed is not met by either reference or by a combination because nowhere is there a disclosure or suggestion of a flange (even if helical slot guide lugs are construed as a flange) and an undercut that are sized and shaped to wedge with rotation in the manner particularly and distinctly claimed.

The claims as amended are in condition for allowance. Allowance is appropriate and is hereby requested.

Respectfully submitted,

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